

MONTANA DEPARTMENT OF TRANSPORTATION

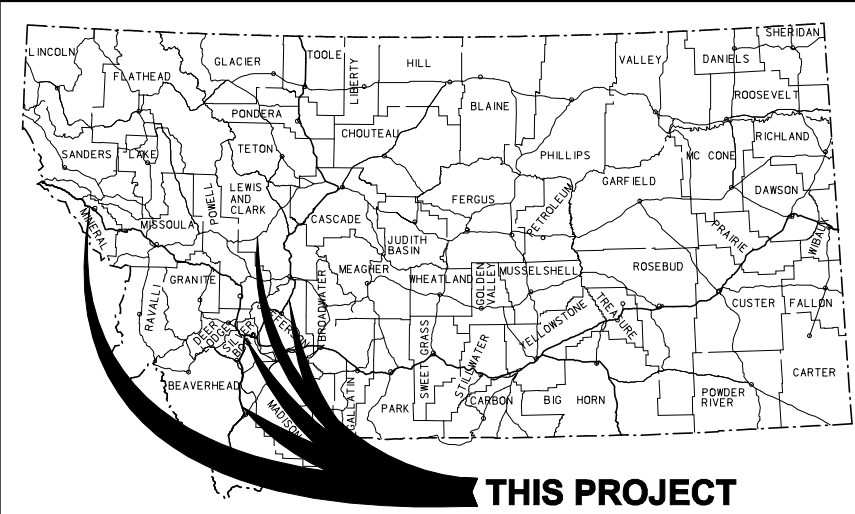
PROJECT NO. IM-NH-STPP STWD(025)

2010 VMS

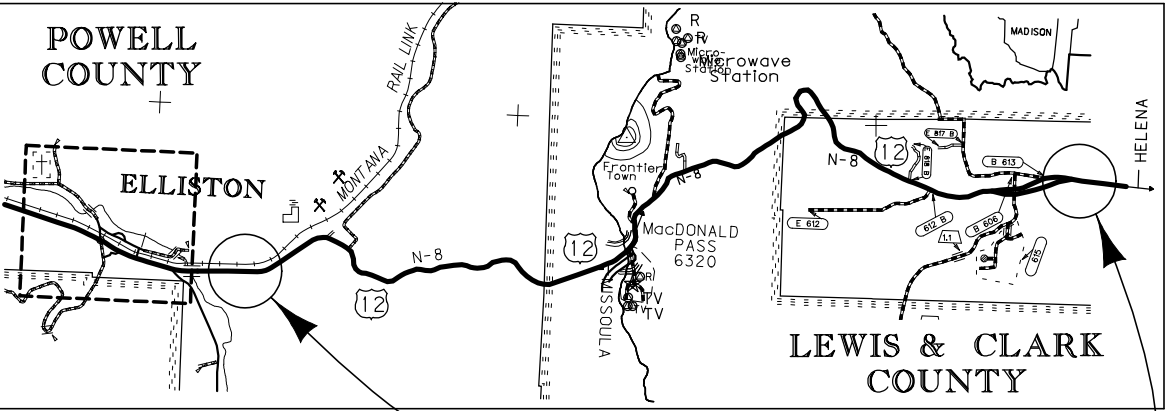
VARIABLE MESSAGE SIGNS

SILVER BOW, BEAVERHEAD, MADISON,

MINERAL, POWELL, LEWIS & CLARK COUNTIES



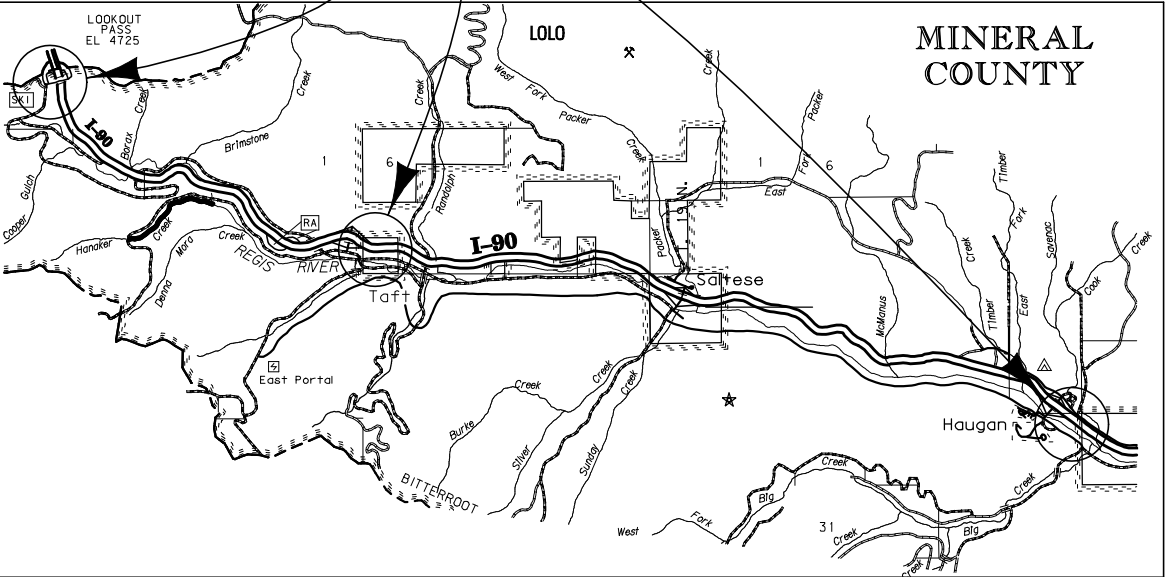
THIS PROJECT



EAST OF LOOKOUT PASS  
WESTBOUND I-90  
RP 0.0, RP 6.3, RP 16.8  
UPGRADE EXISTING VARIABLE  
MESSAGE SIGNS

WEST OF MACDONALD PASS  
EASTBOUND US 12 / RP 23.0  
VARIABLE MESSAGE SIGN

EAST OF MACDONALD PASS  
WESTBOUND US 12 / RP 34.67  
VARIABLE MESSAGE SIGN



ASSOCIATED PROJECT  
AGREEMENT NUMBERS

R / W & I.C.

P. E.

CONTROL NO. 7037000

NORTH OF DILLON  
SOUTHBOUND I-15 / RP 65.6  
CONCRETE PAD FOR PORTABLE  
VARIABLE MESSAGE SIGN

LENGTH N/A miles

SCALES

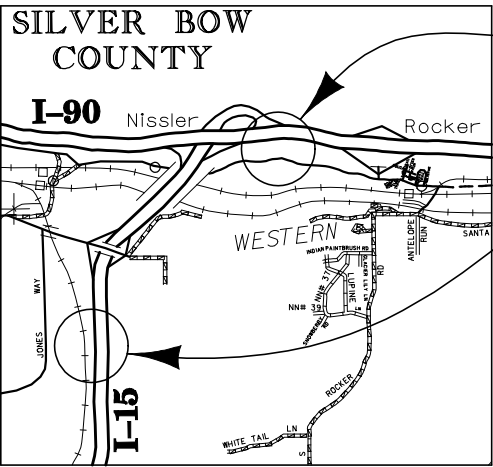
VERTICAL: 1 : N/A

HORIZONTAL: 1 : N/A

CROSS SECTION - HORIZONTAL & VERTICAL: 1 : N/A

REDUCED PRINTS ONE-HALF ORIGINAL SCALE

ALL SCALES ARE APPROXIMATE



WEST OF BUTTE  
EASTBOUND I-90 / RP 217.5  
CONCRETE PAD FOR PORTABLE  
VARIABLE MESSAGE SIGN

WEST OF BUTTE  
SOUTHBOUND I-15 / RP 119.5  
VARIABLE MESSAGE SIGN

NORTH OF TWIN BRIDGES  
SOUTHBOUND MT 41 / RP 46.4  
CONCRETE PAD FOR PORTABLE  
VARIABLE MESSAGE SIGN

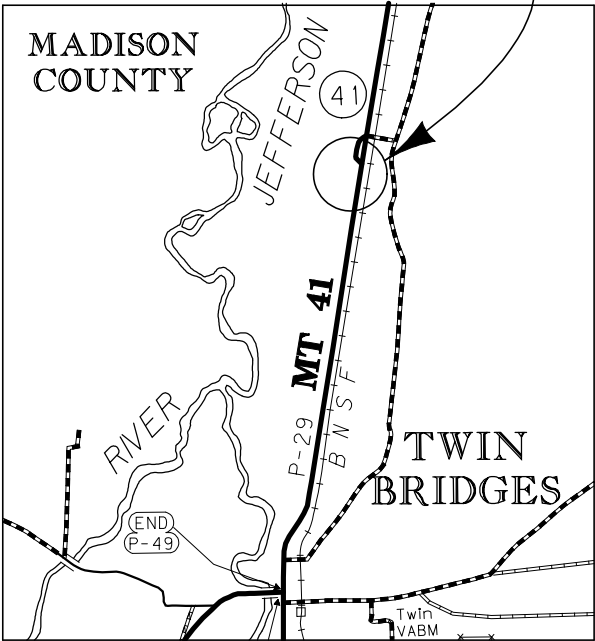
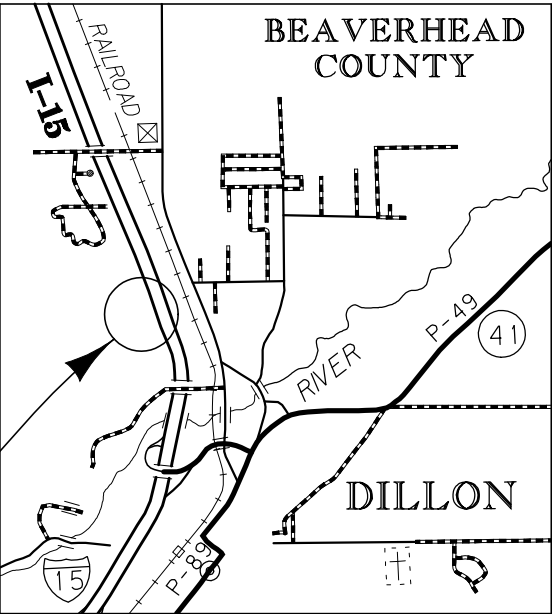


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ELECTRICAL DETAILS	E1 - E6
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NOTES

TEMPORARY EROSION AND SEDIMENT CONTROL

IF SITUATIONS ARE OBSERVED DURING CONSTRUCTION THAT MAY POTENTIALLY IMPACT WATER QUALITY, INCLUDING WETLAND AREAS, UTILIZE BEST MANAGEMENT PRACTICES (BMP) AND/OR TEMPORARY EROSION CONTROL MEASURES AS NECESSARY TO PROTECT THE RESOURCE. REFER TO SECTION 208 OF THE MDT DETAILED DRAWINGS (ENGLISH EDITION) FOR EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES. INSTALL TEMPORARY EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE ENGINEER. PAYMENT TO BE DETERMINED USING THE EROSION AND SEDIMENT CONTROL RATE SCHEDULE AND PAID UNDER MISCELLANEOUS WORK.

ELECTRICAL QUANTITY SUMMARY

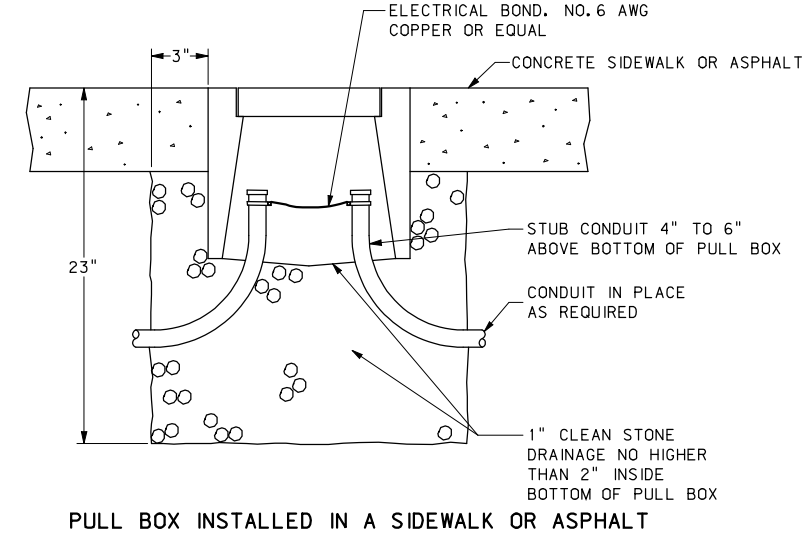
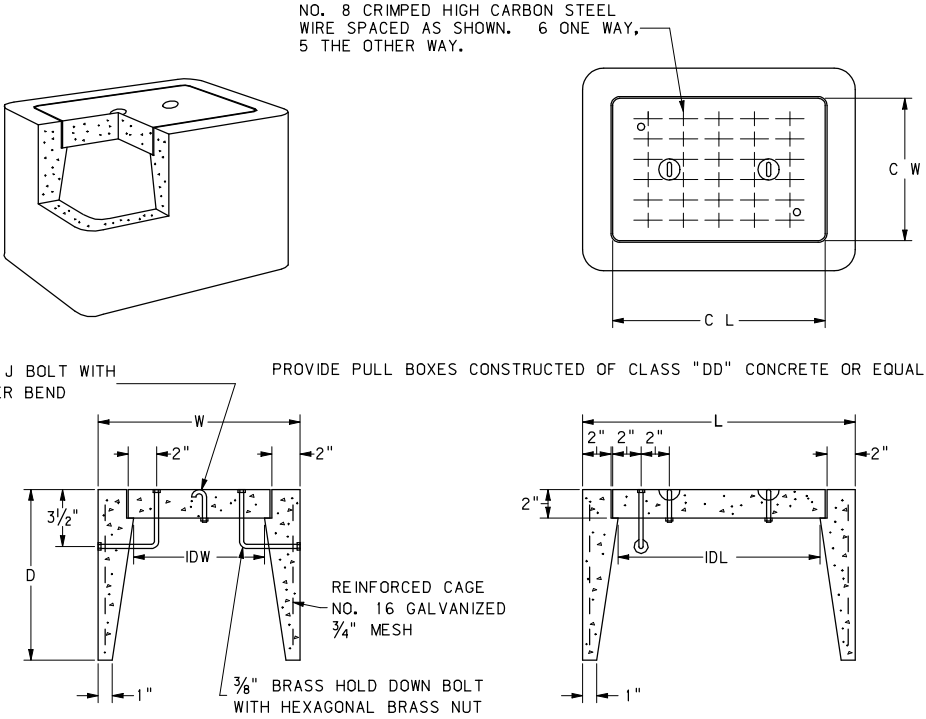
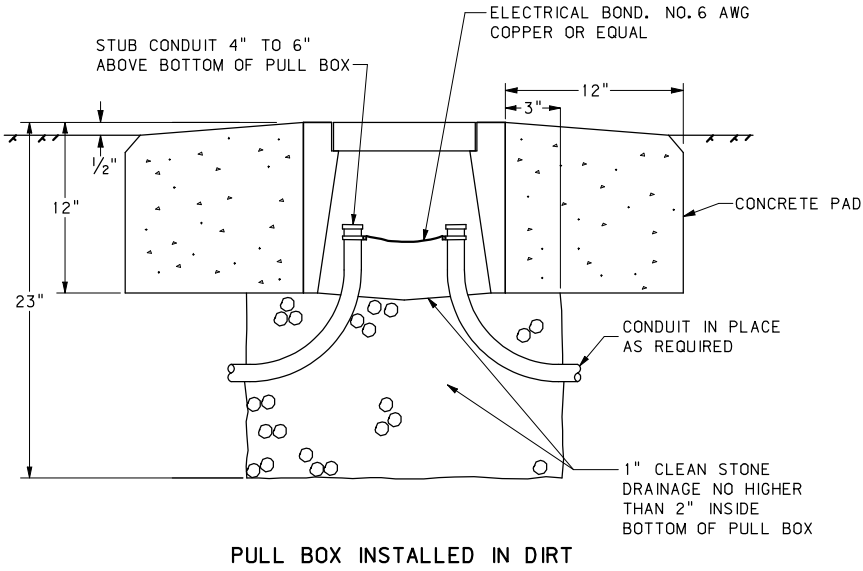
ITEM NO.	MATERIAL	UNIT	TOTAL										
				#1	#2	#3	#4	#5	#6	#6	#6	#6	#6
551 020 060	CONCRETE - CLASS D	CU YD	6.0	3.0	3.0	-	-	-	-	-	-	-	-
616 343 920	CONDUIT - PLASTIC 2 IN	LN FT	355.0	-	-	-	165.0	90.0	100.0	-	-	-	-
617 123 104	CONDUCTOR - COPPER AWG4-600 V	LN FT	1330	-	-	-	700.0	310.0	320.0	-	-	-	-
617 123 106	CONDUCTOR - COPPER AWG6-600 V	LN FT	460.0	-	-	-	-	-	-	205.0	115.0	140.0	-
617 123 108	CONDUCTOR - COPPER AWG8-600 V	LN FT	990.0	-	-	-	522.0	228.0	240.0	-	-	-	-
617 123 110	CONDUCTOR - COPPER AWG10-600 V	LN FT	1700.0	-	-	-	175.0	75.0	85.0	612.0	343.0	410.0	-
617 333 000	SERV ASSEMBLY - MODIFY	EACH	3	-	-	-	-	-	-	1	1	1	-
617 333 195	SERV ASSEMB - 100 AMP	EACH	3	-	-	-	1	1	1	-	-	-	-
617 781 000	REMOVAL AND SALVAGE	L SUM	100%	-	-	-	-	-	-	30%	30%	40%	-
* 617 905 010	VARIABLE MESSAGE SIGN - INSTALL	EACH	6	-	-	-	1	1	1	1	1	1	-
619 010 410	POLES - TREATED TIMBER CLASS 4	LN FT	30.0	-	-	-	30.0	-	-	-	-	-	-
619 010 510	OVERHEAD STRUCTURE / METAL	EACH	3	-	-	-	1	1	1	-	-	-	-

\* - INDICATES STATE FURNISHED MATERIAL

QUANTITY SUMMARY

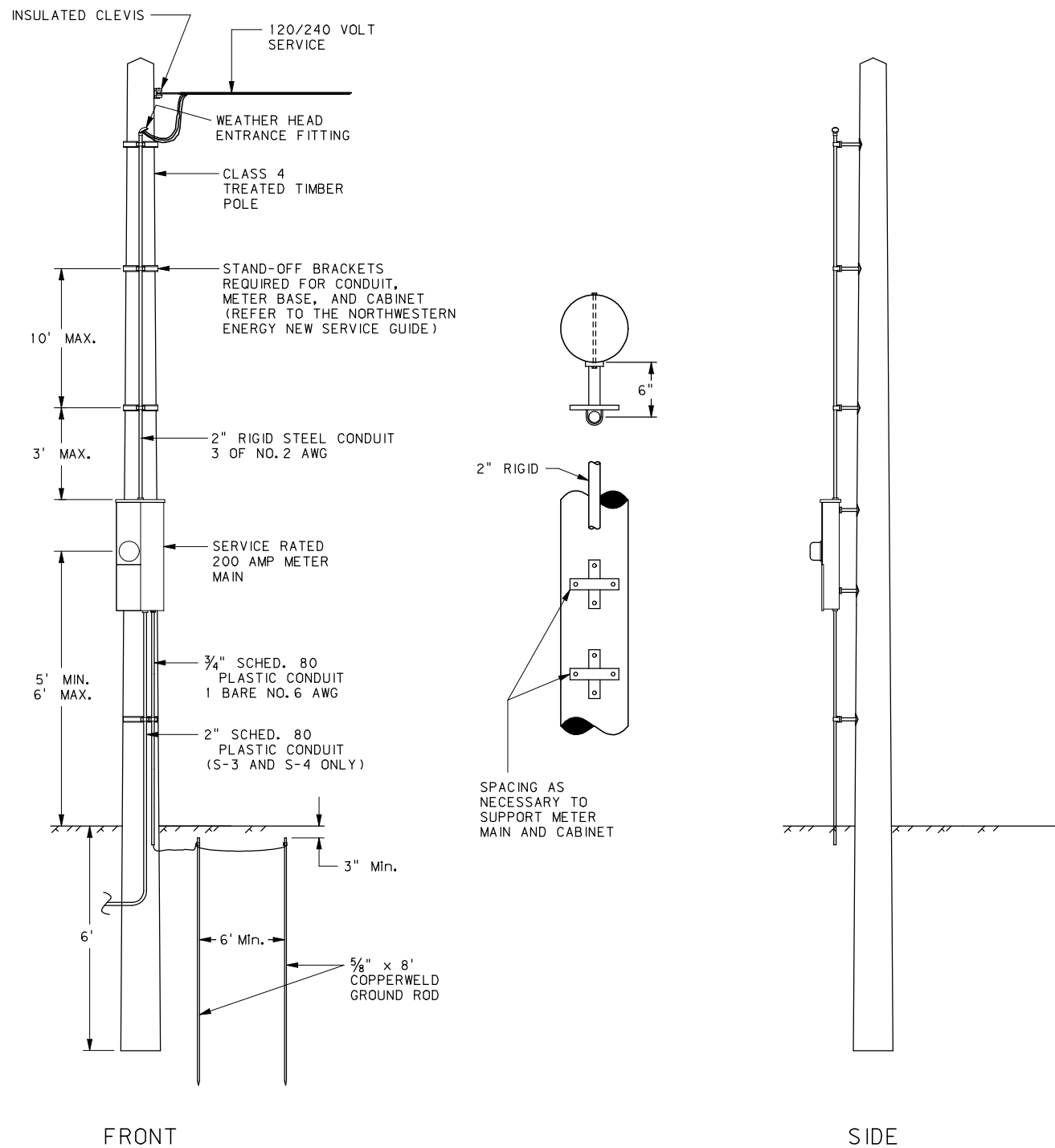
PULL BOX - CONCRETE MINIMUM DIMENSIONS		
TYPE 1	TYPE 2	TYPE 3
L = 19"	L = 25"	L = 33"
W = 13"	W = 16"	W = 20"
D = 12"	D = 12"	D = 12"
ID L = 14"	ID L = 20"	ID L = 28"
ID W = 8"	ID W = 11"	ID W = 15"
C L = 15"	C L = 21"	C L = 29"
C W = 9"	C W = 12"	C W = 16"

NOTE: WHEN REPLACING AN EXISTING PULL BOX, ADJUST CONDUIT STUB HEIGHT ACCORDINGLY.

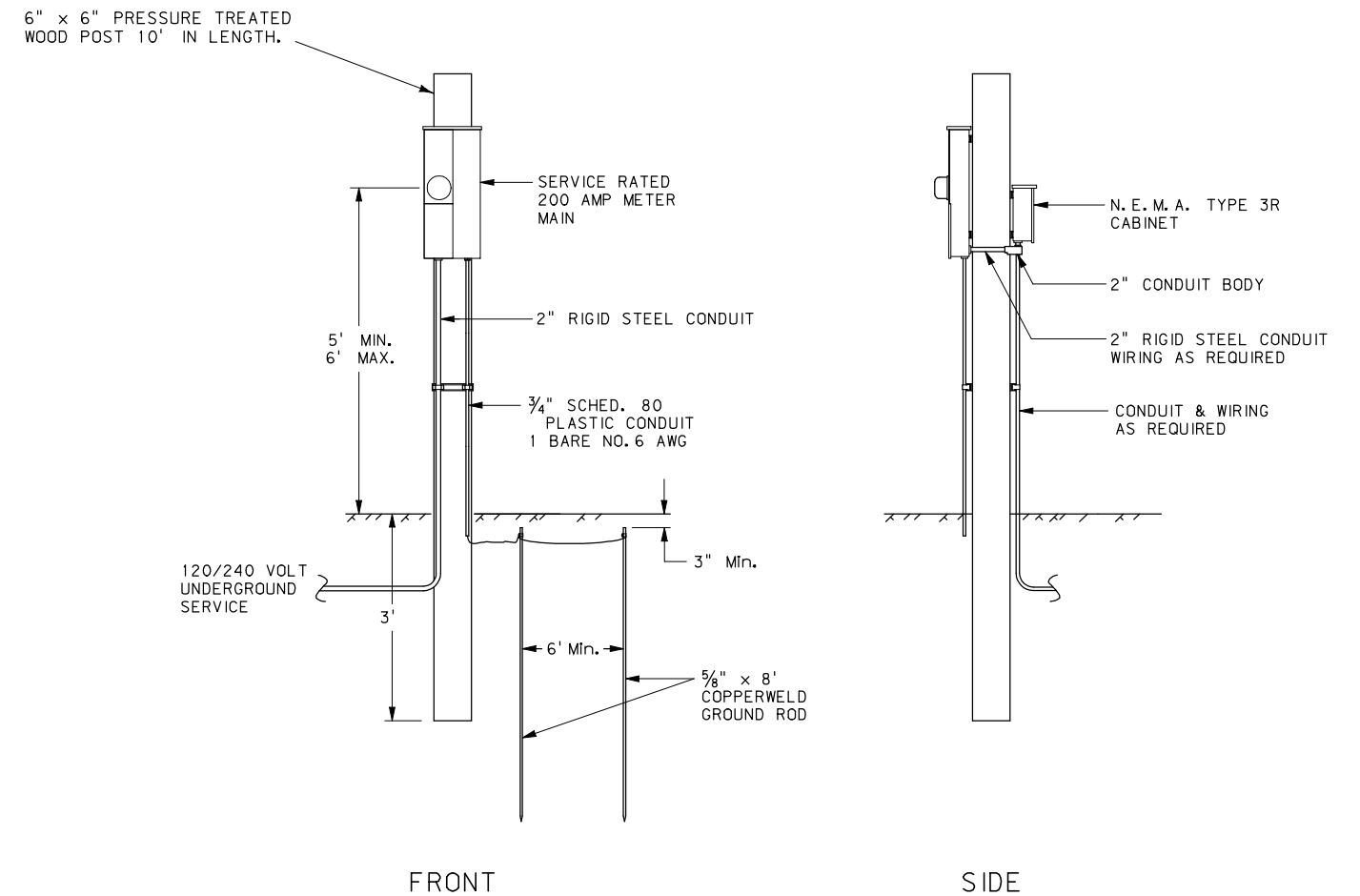


PULL BOX-CONCRETE  
TYPE I, II & III  
NO SCALE

REVISED 21-OCT-2004

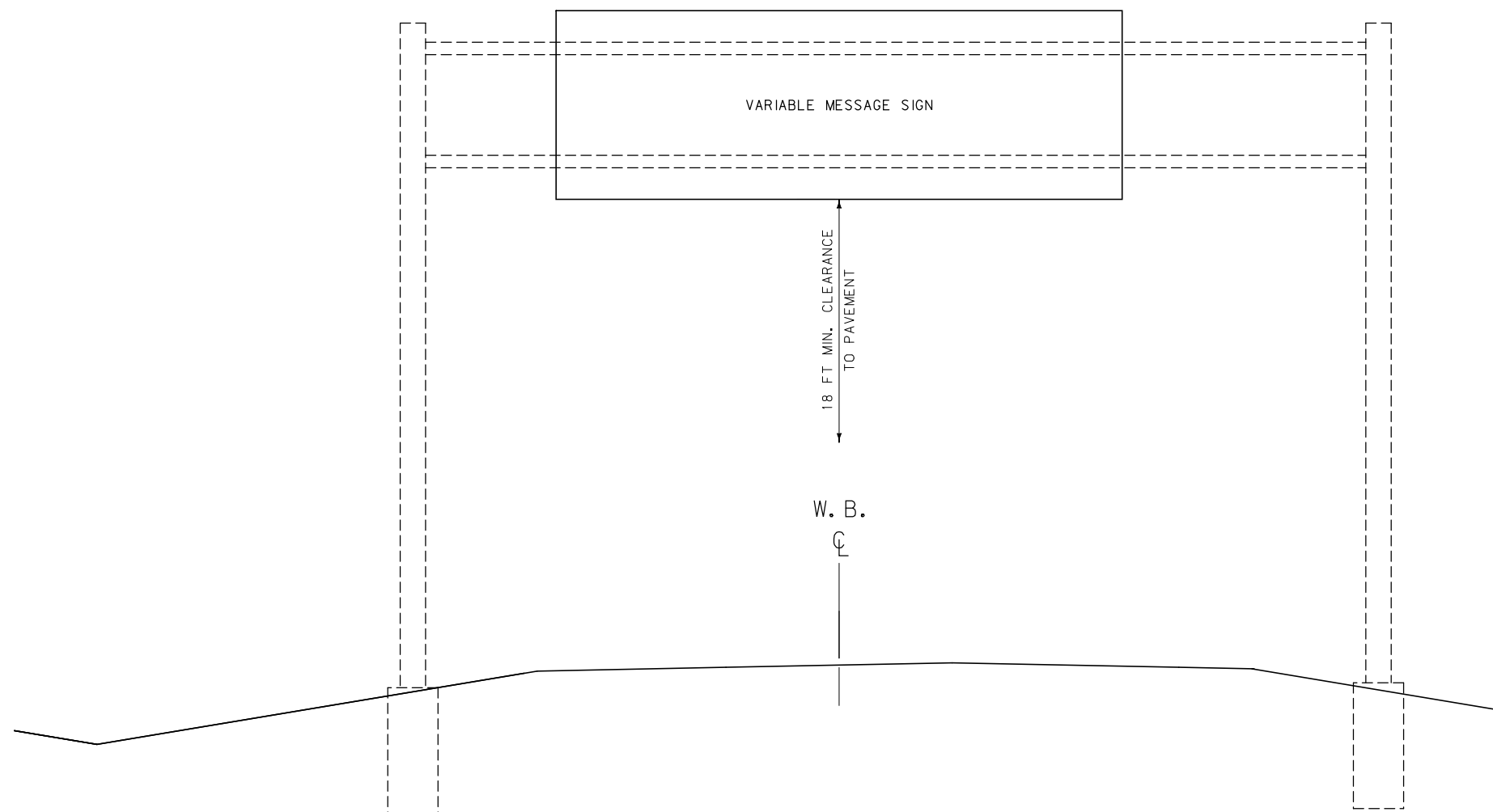


OVERHEAD SERVICE ASSEMBLY DETAIL  
I15 - RP 119.5

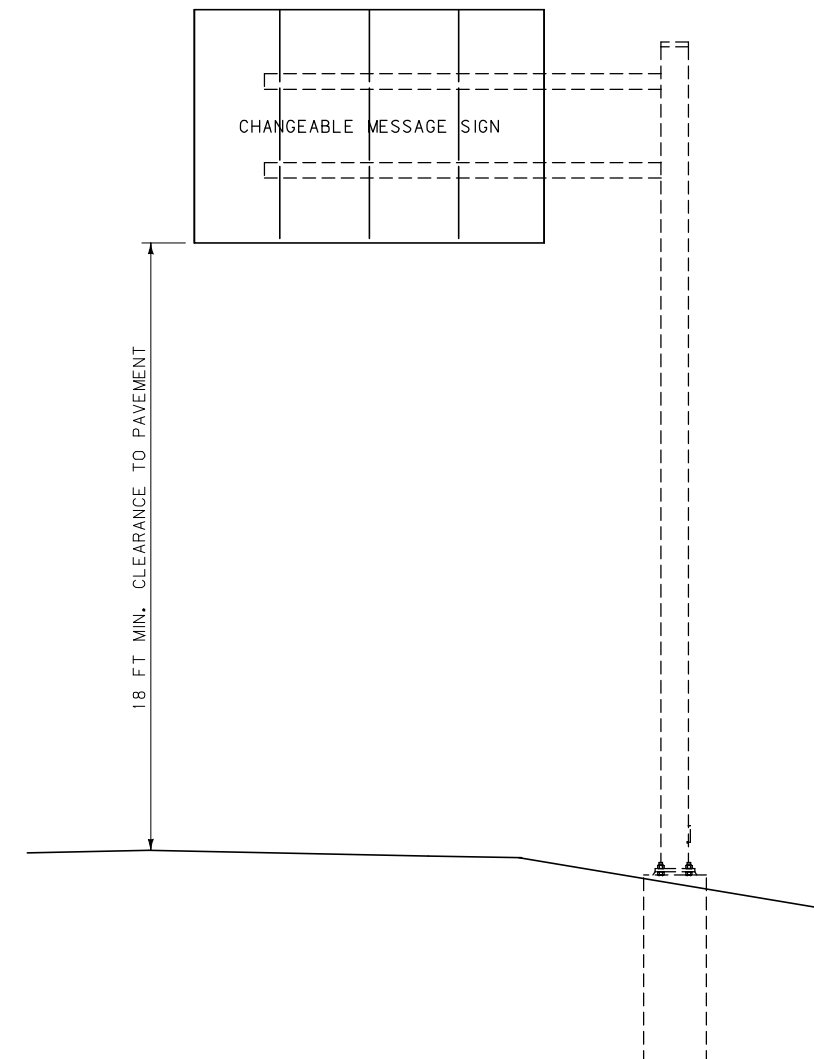


UNDERGROUND SERVICE ASSEMBLY DETAIL  
US 12 - RP 23.0, RP 34.67

SERVICE ASSEMBLIES  
NO SCALE



R.P. 16.8  
SIGN BRIDGE STRUCTURE



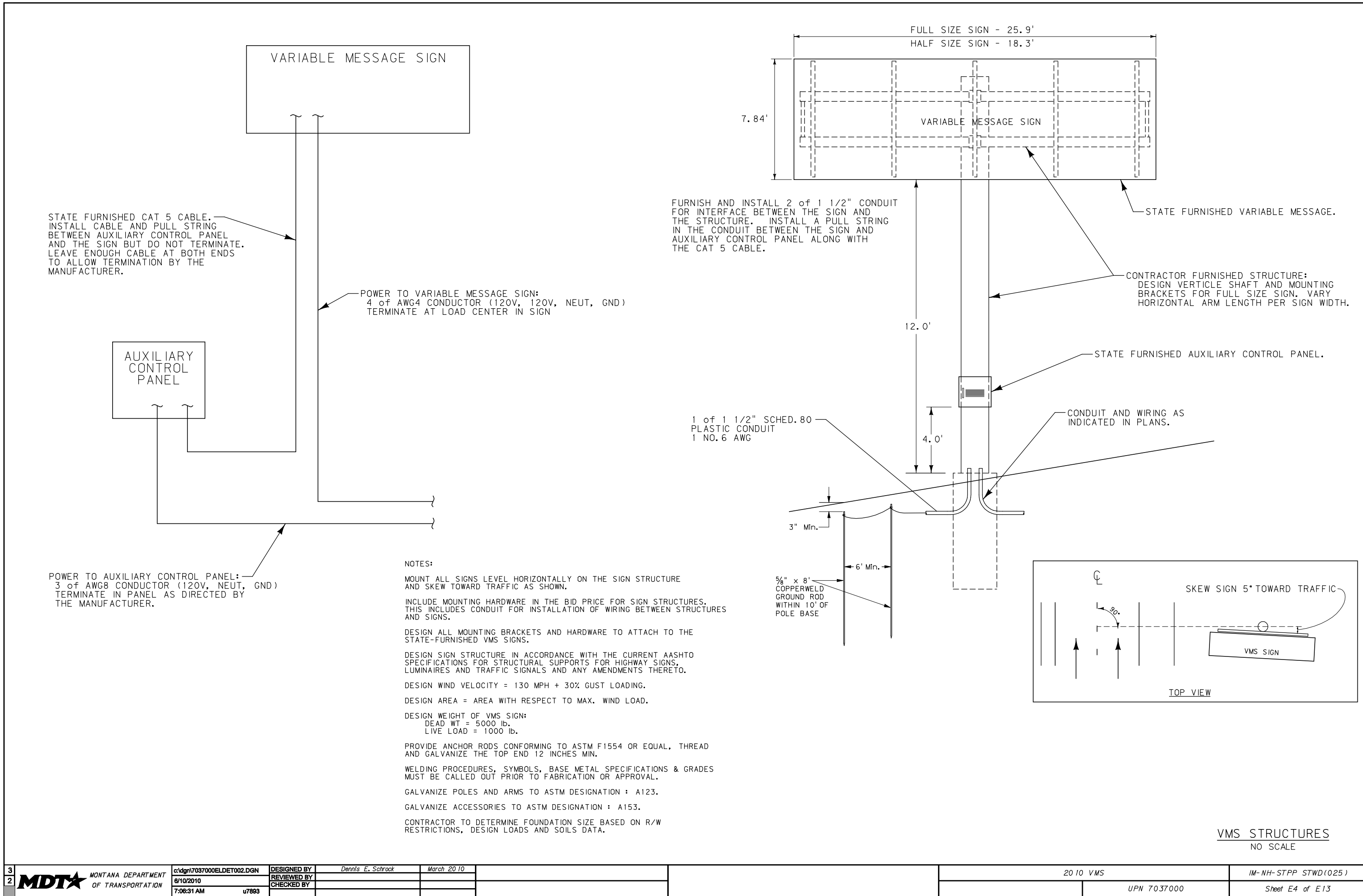
R.P. 0.0 AND R.P. 6.3  
CANTILEVER STRUCTURE

NOTES:

MOUNT ALL SIGNS LEVEL HORIZONTALLY ON THE SIGN STRUCTURE.

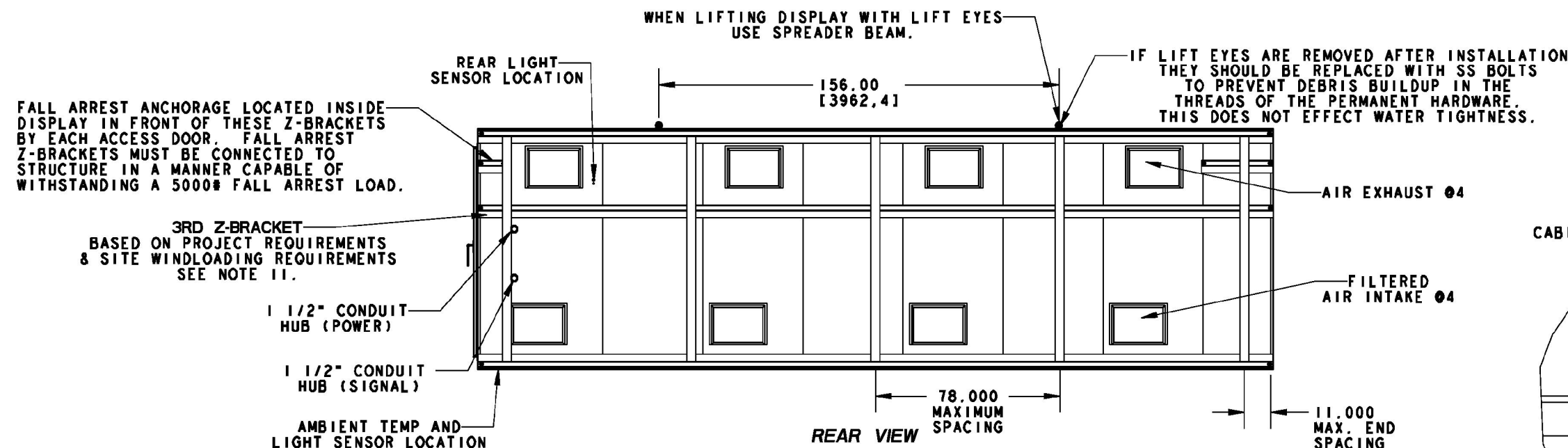
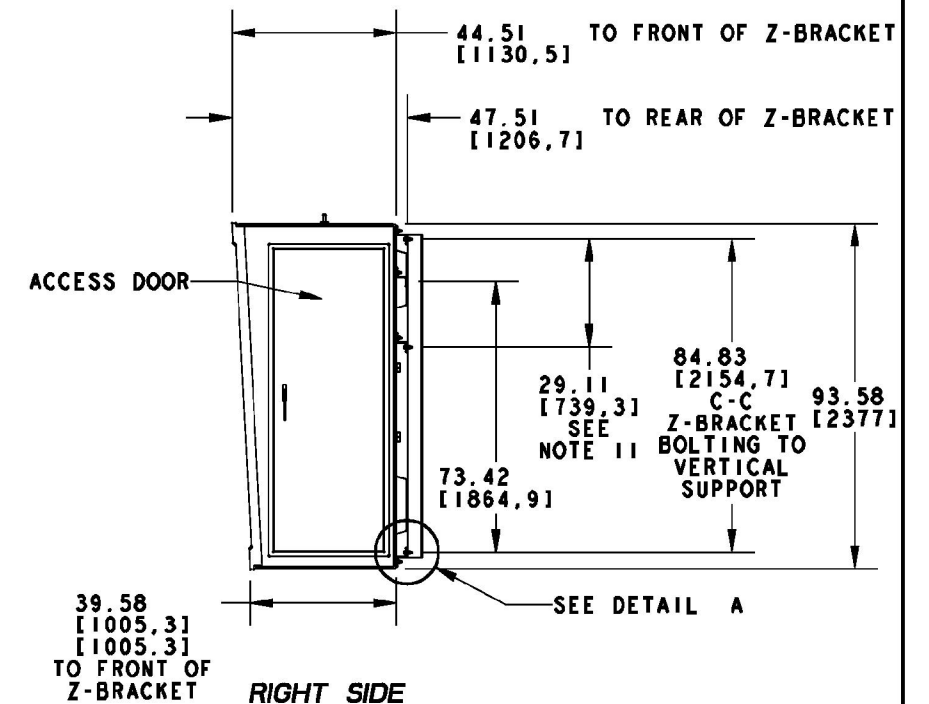
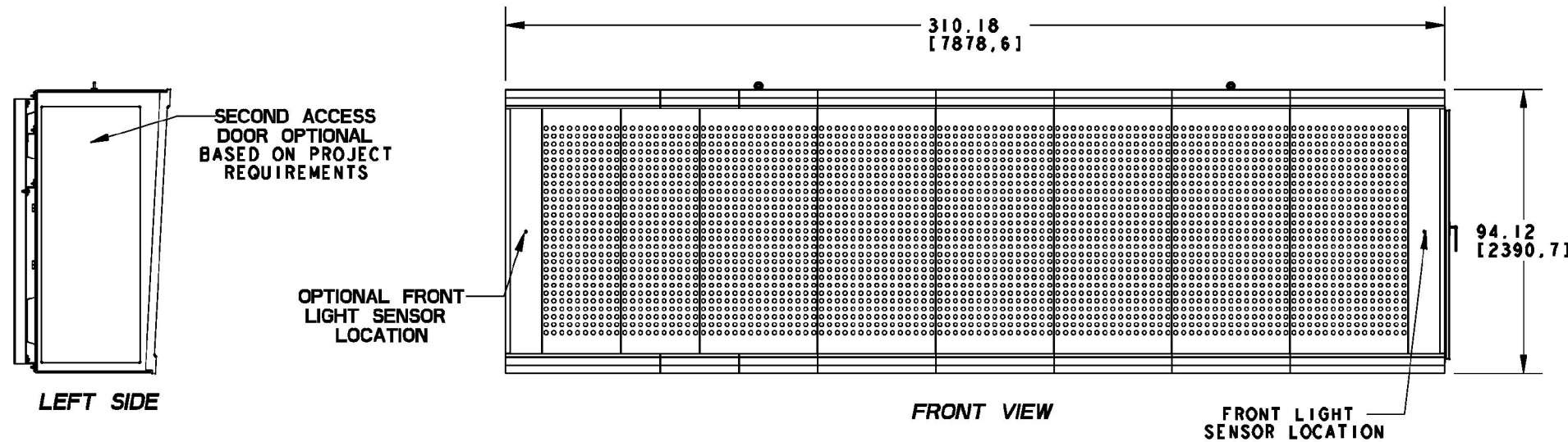
DESIGN ALL MOUNTING BRACKETS AND HARDWARE TO ATTACH TO  
STATE-FURNISHED VMS/CMS SIGNS.

DESIGN WEIGHT:  
FULL SIZE SIGN = 3550 LBS  
HALF SIZE SIGN = 2550 LBS



VMS STRUCTURES  
NO SCALE

THIS SHEET PROVIDED BY  
SIGN MANUFACTURER FOR  
INFORMATION ONLY  
NO SCALE

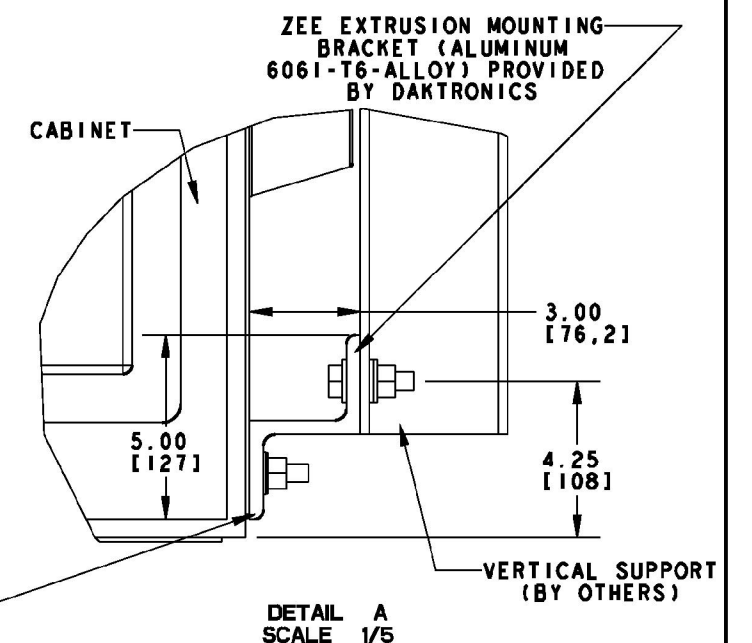


NOTES:

- 1.) MATRIX SIZE 27X110, 18" NOMINAL CHARACTER
- 2.) DISPLAY WILL BE A SINGLE FACE CONFIGURATION.
- 3.) SEE ILLUSTRATIONS FOR POWER AND SIGNAL CONDUIT ENTRANCES.
- 4.) ALL DIMENSIONS ARE IN INCHES [mm].
- 5.) FULL PROTECTIVE MASKED FACE PANEL.
- 6.) MAINTENANCE OF DISPLAY IS INTERNAL VIA WALK IN CABINET.
- 7.) ALL ALUMINUM CONSTRUCTION
- 8.) POSITIVE PRESSURE VENTILATION SYSTEM
- 9.) WEIGHT OF THE DISPLAY IS APPROXIMATELY 3530 LBS (1601 KG).
- 10.) VERTICAL SUPPORTS DESIGNED AND SUPPLIED BY OTHERS.
- 11.) MOUNTING CALCULATIONS DONE TO "AASHTO STANDARD SPEC. FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. AASHTO 5TH EDITION 2009;"
  - 2 Z-BRACKETS: UP TO 120 MPH WIND ZONE
  - 3 Z-BRACKETS: UP TO 150 MPH WIND ZONE
- 12.) IF VERTICAL SUPPORTS NEED TO BE MOVED OUTSIDE OF STATED MAXIMUM SPACING OR IF SPECIFICATIONS EXCEED NOTE #10 THEN CONTACT DAKTRONICS ENGINEERING.

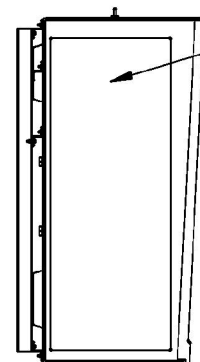
---NOTE---  
NUMBER OF SUPPORTS SHOWN  
MAY NOT BE ACTUAL NUMBER  
OF SUPPORTS REQUIRED

Z-BRACKETS ARE BOLTED TO THE REAR OF THE DISPLAY BY DAKTRONICS. THE VERTICAL SUPPORTS SHOWN ARE PROVIDED BY OTHERS. EACH Z-BRACKET IS ATTACHED TO THE CABINET USING Ø1/2" A325 MECHANICALLY GALVANIZED STRUCTURAL GRADE HARDWARE. FINAL REVIEW OF MOUNTING DETAIL IS THE RESPONSIBILITY OF THE CUSTOMER AND THE CUSTOMER'S ENGINEERS. THE VERTICAL SUPPORTS MUST BE ATTACHED AS SHOWN WITHIN THE STATED TOLERANCE.



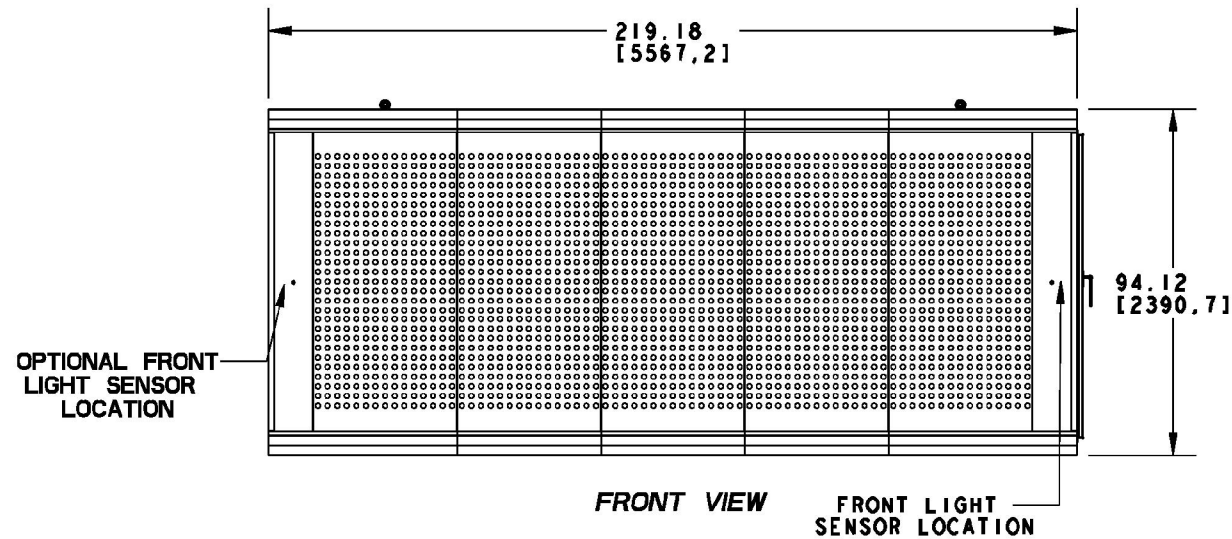
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2009 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:	VANGUARD		
TITLE:	SHOP DRAWING, VF-2000-27X110-66-0		
DES. BY:	JHALIBU	DRAWN BY:	JHALIBU
DATE:	21 DEC 09		
REVISION	00	SHEET 1 OF DWG 968979	1589 - F10B - 968979
SCALE:	1:50		

THIS SHEET PROVIDED BY  
SIGN MANUFACTURER FOR  
INFORMATION ONLY  
NO SCALE



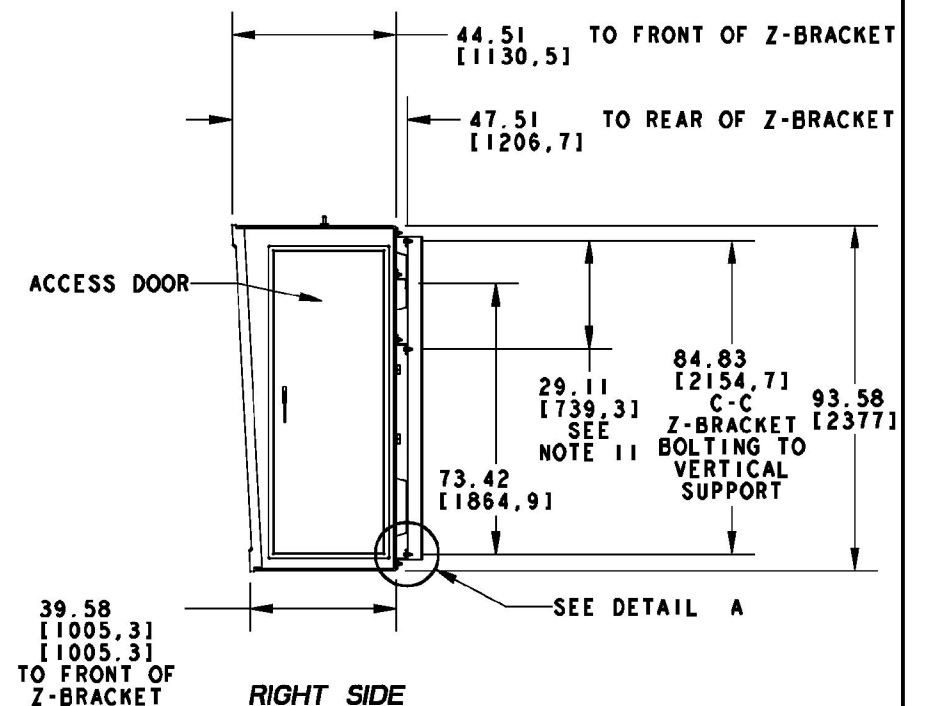
SECOND ACCESS  
DOOR OPTIONAL  
BASED ON PROJECT  
REQUIREMENTS

LEFT SIDE

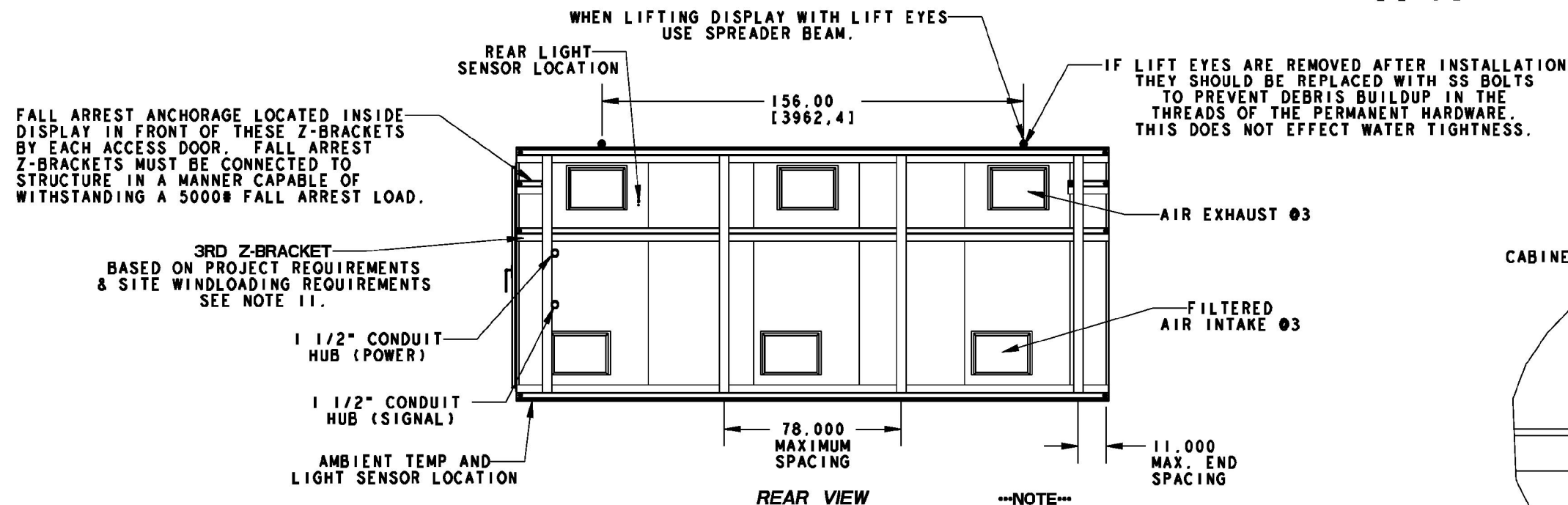


FRONT VIEW

FRONT LIGHT  
SENSOR LOCATION



RIGHT SIDE

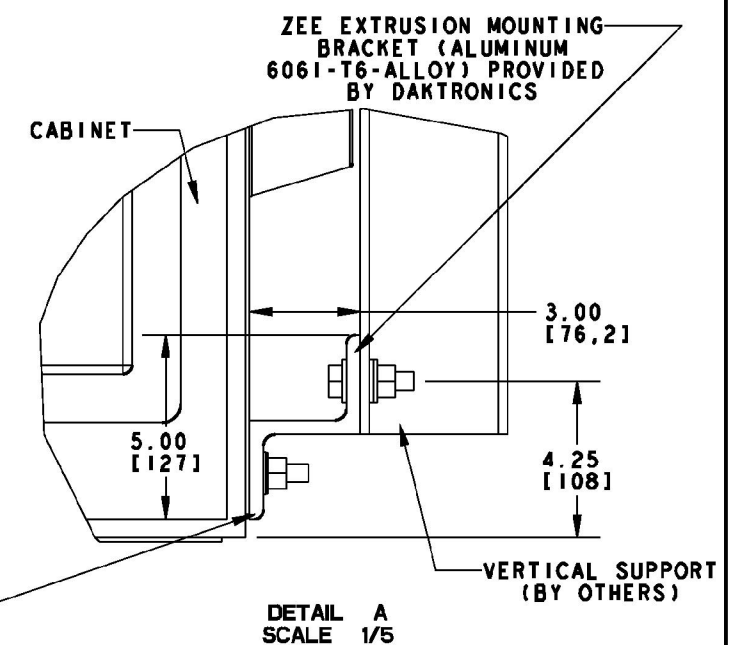


REAR VIEW

---NOTE---  
NUMBER OF SUPPORTS SHOWN  
MAY NOT BE ACTUAL NUMBER  
OF SUPPORTS REQUIRED

NOTES:

- 1.) MATRIX SIZE 27X75, 18" NOMINAL CHARACTER
- 2.) DISPLAY WILL BE A SINGLE FACE CONFIGURATION.
- 3.) SEE ILLUSTRATIONS FOR POWER AND SIGNAL CONDUIT ENTRANCES.
- 4.) ALL DIMENSIONS ARE IN INCHES [mm].
- 5.) FULL PROTECTIVE MASKED FACE PANEL.
- 6.) MAINTENANCE OF DISPLAY IS INTERNAL VIA WALK IN CABINET.
- 7.) ALL ALUMINUM CONSTRUCTION
- 8.) POSITIVE PRESSURE VENTILATION SYSTEM
- 9.) WEIGHT OF THE DISPLAY IS APPROXIMATELY 2550 LBS (1157 KG).
- 10.) VERTICAL SUPPORTS DESIGNED AND SUPPLIED BY OTHERS.
- 11.) MOUNTING CALCULATIONS DONE TO "AASHTO STANDARD SPEC. FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. AASHTO 5TH EDITION 2009;"  
2 Z-BRACKETS: UP TO 120 MPH WIND ZONE  
3 Z-BRACKETS: UP TO 150 MPH WIND ZONE
- 12.) IF VERTICAL SUPPORTS NEED TO BE MOVED OUTSIDE OF STATED MAXIMUM SPACING OR IF SPECIFICATIONS EXCEED NOTE #10 THEN CONTACT DAKTRONICS ENGINEERING.

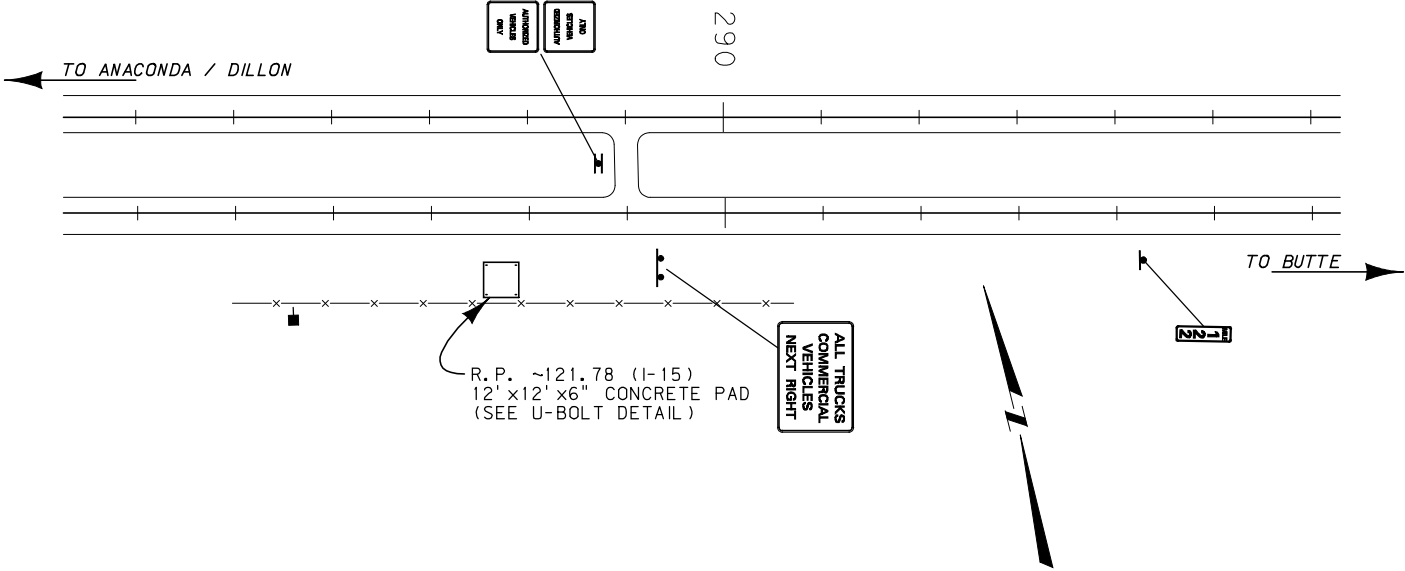


DETAIL A  
SCALE 1/5

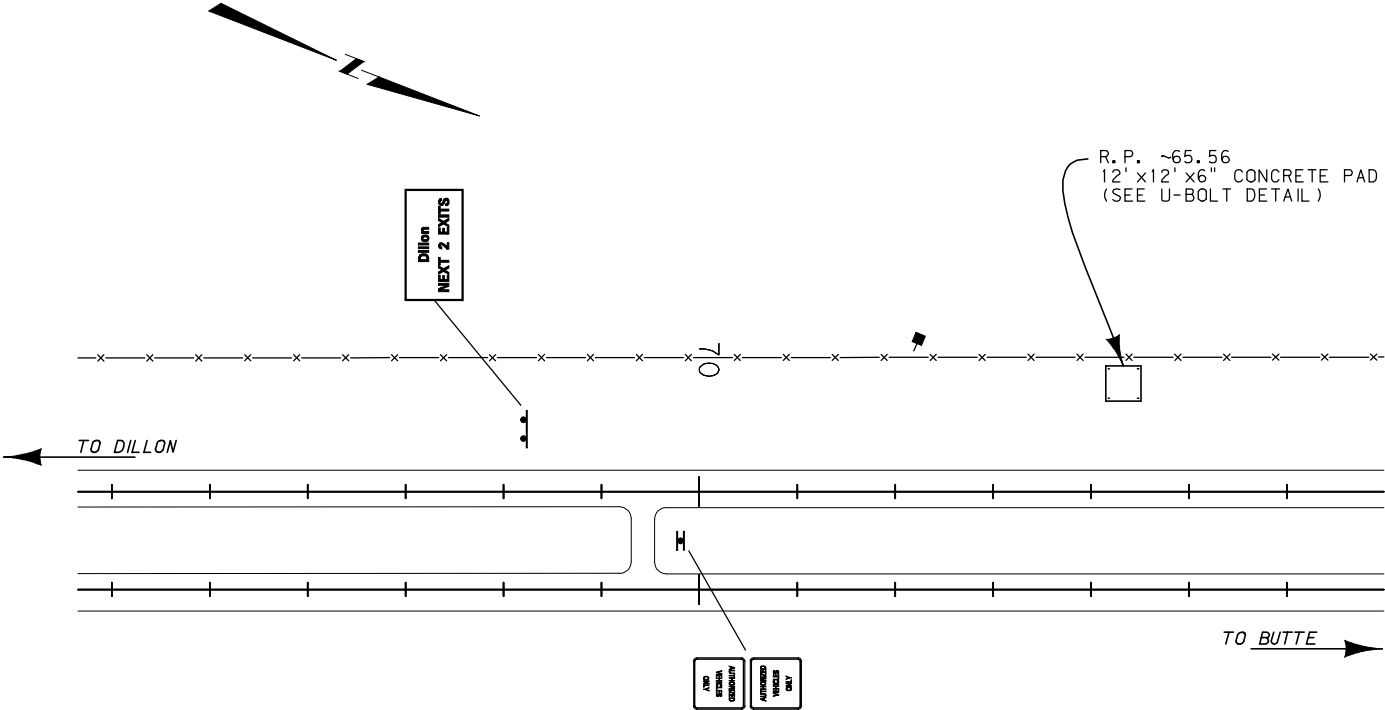
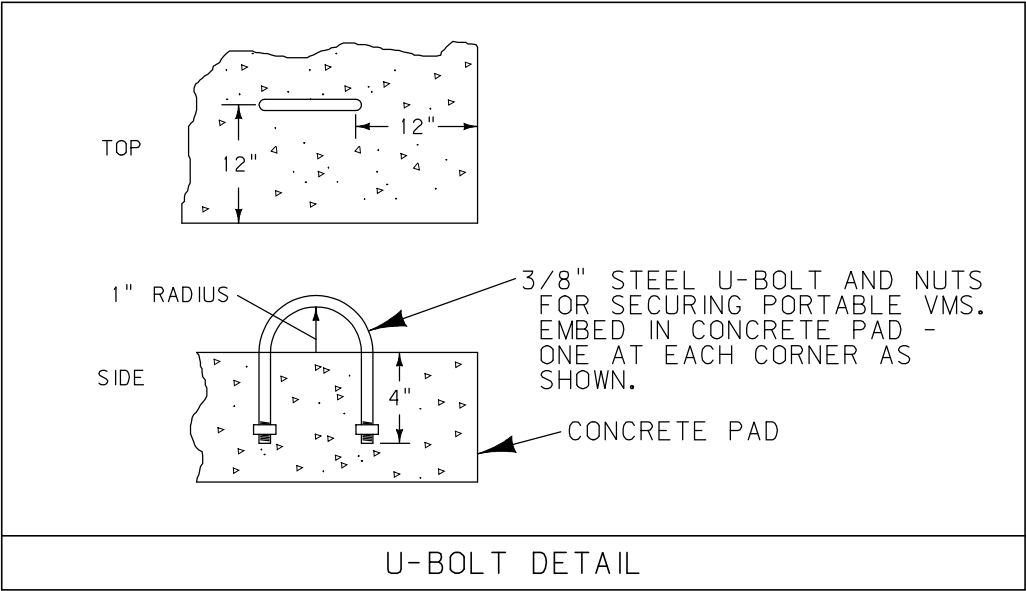
Z-BRACKETS ARE BOLTED TO THE REAR OF THE DISPLAY BY DAKTRONICS. THE VERTICAL SUPPORTS SHOWN ARE PROVIDED BY OTHERS. EACH Z-BRACKET IS ATTACHED TO THE CABINET USING  $\phi 1/2"$  A325 MECHANICALLY GALVANIZED STRUCTURAL GRADE HARDWARE. FINAL REVIEW OF MOUNTING DETAIL IS THE RESPONSIBILITY OF THE CUSTOMER AND THE CUSTOMER'S ENGINEERS. THE VERTICAL SUPPORTS MUST BE ATTACHED AS SHOWN WITHIN THE STATED TOLERANCE.

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:	VANGUARD		
TITLE:	SHOP DRAWING, VF-2000-27X75-66-0		
DES. BY:	JHALIBU	DRAWN BY:	JHALIBU
DATE:	21 DEC 09	REVISION	00
SHEET 1 OF DWG 968975	1589 - F10B - 968975		
SCALE:	1:50		

NB I 15 - REFERENCE POST 121.8  
EB I 90 - REFERENCE POST 217.5



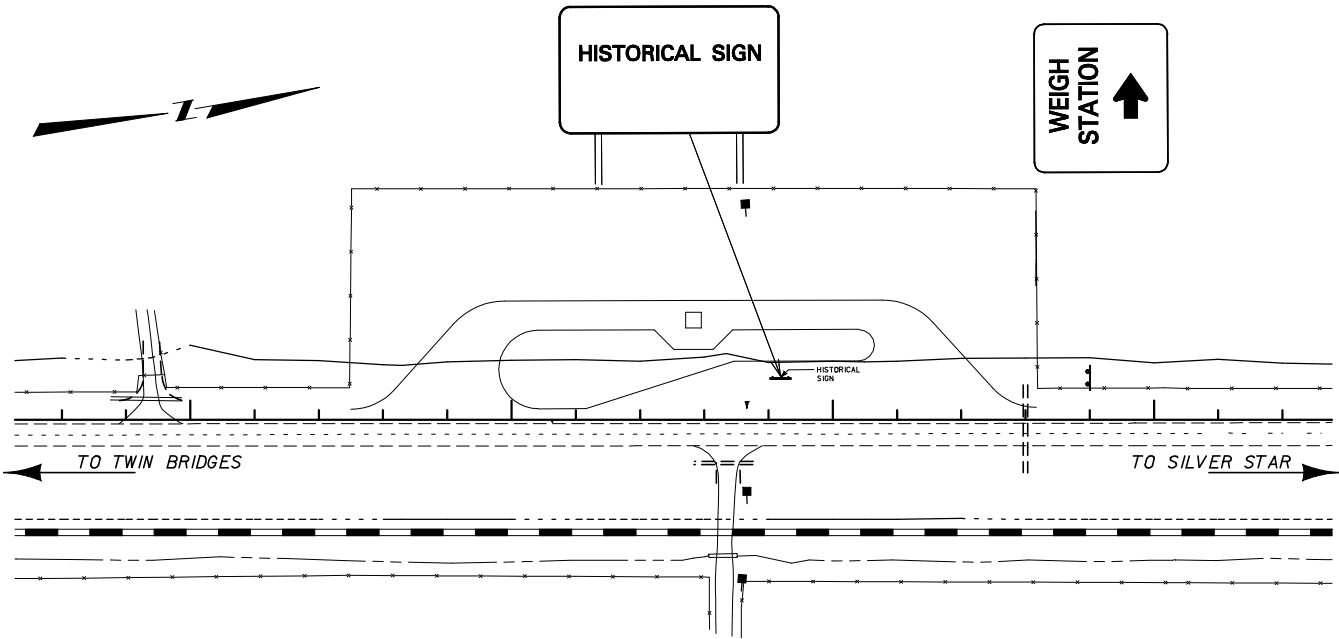
NO SCALE



I 15 SB - REFERENCE POST 65.6

NO SCALE

THIS FRAME IS FOR REFERENCE ONLY.



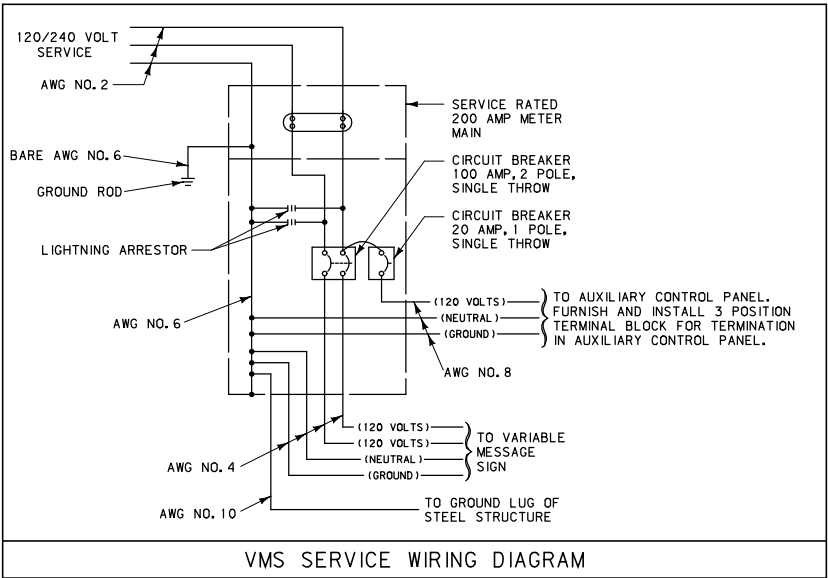
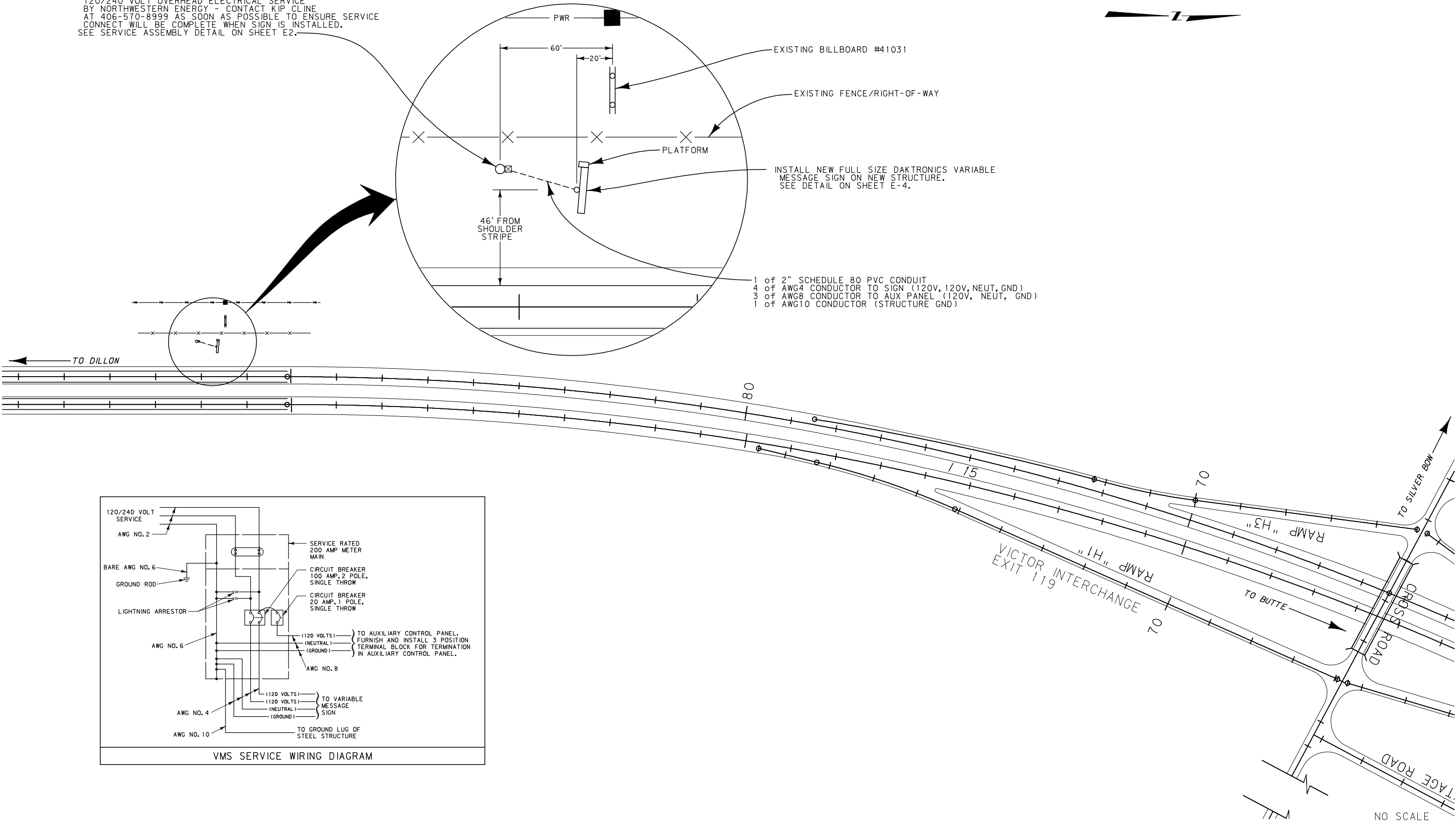
MT 41 - REFERENCE POST 46.4

NO SCALE

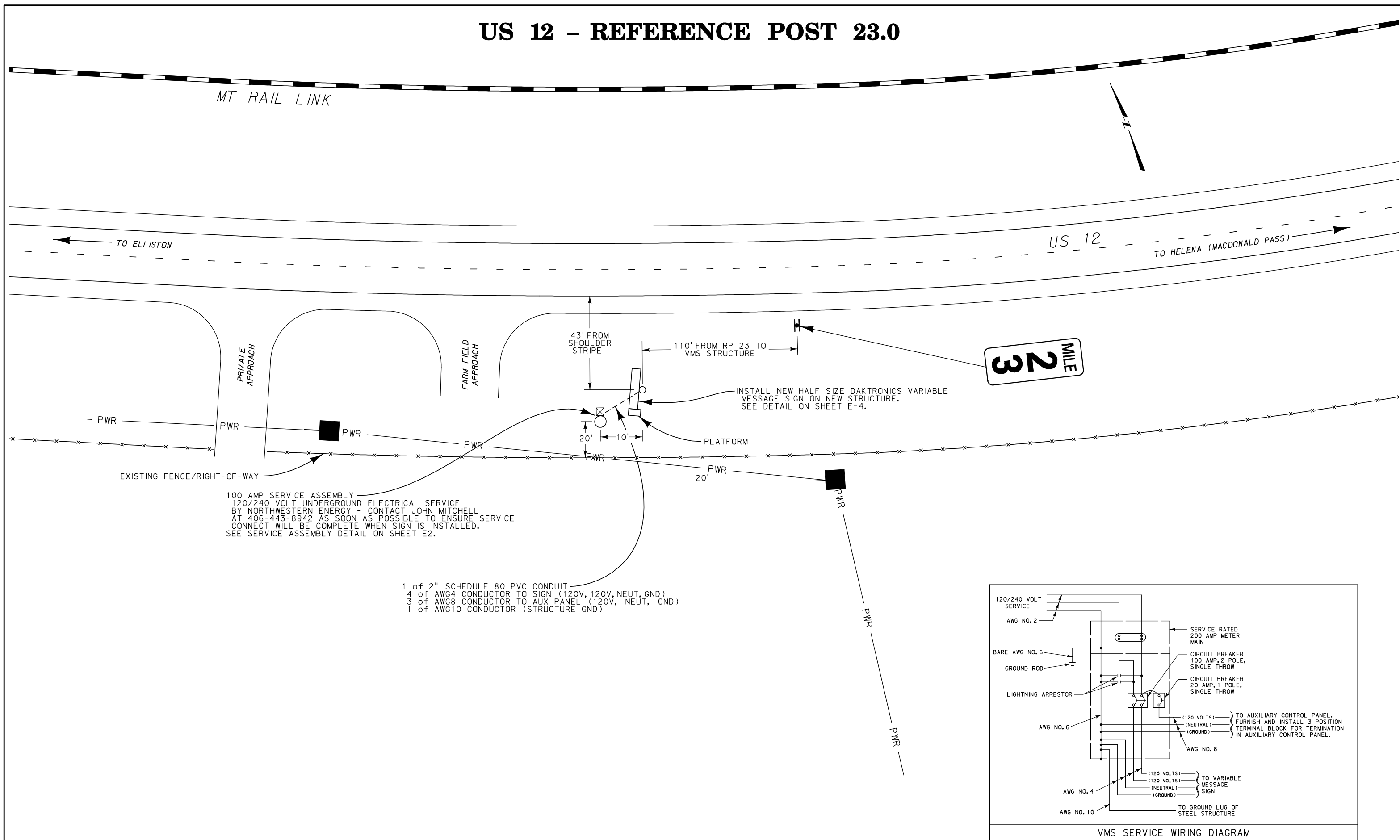


# I 15 SB - REFERENCE POST 119.5

100 AMP SERVICE ASSEMBLY  
120/240 VOLT OVERHEAD ELECTRICAL SERVICE  
BY NORTHWESTERN ENERGY - CONTACT KIP CLINE  
AT 406-570-8999 AS SOON AS POSSIBLE TO ENSURE SERVICE  
CONNECT WILL BE COMPLETE WHEN SIGN IS INSTALLED.  
SEE SERVICE ASSEMBLY DETAIL ON SHEET E2.



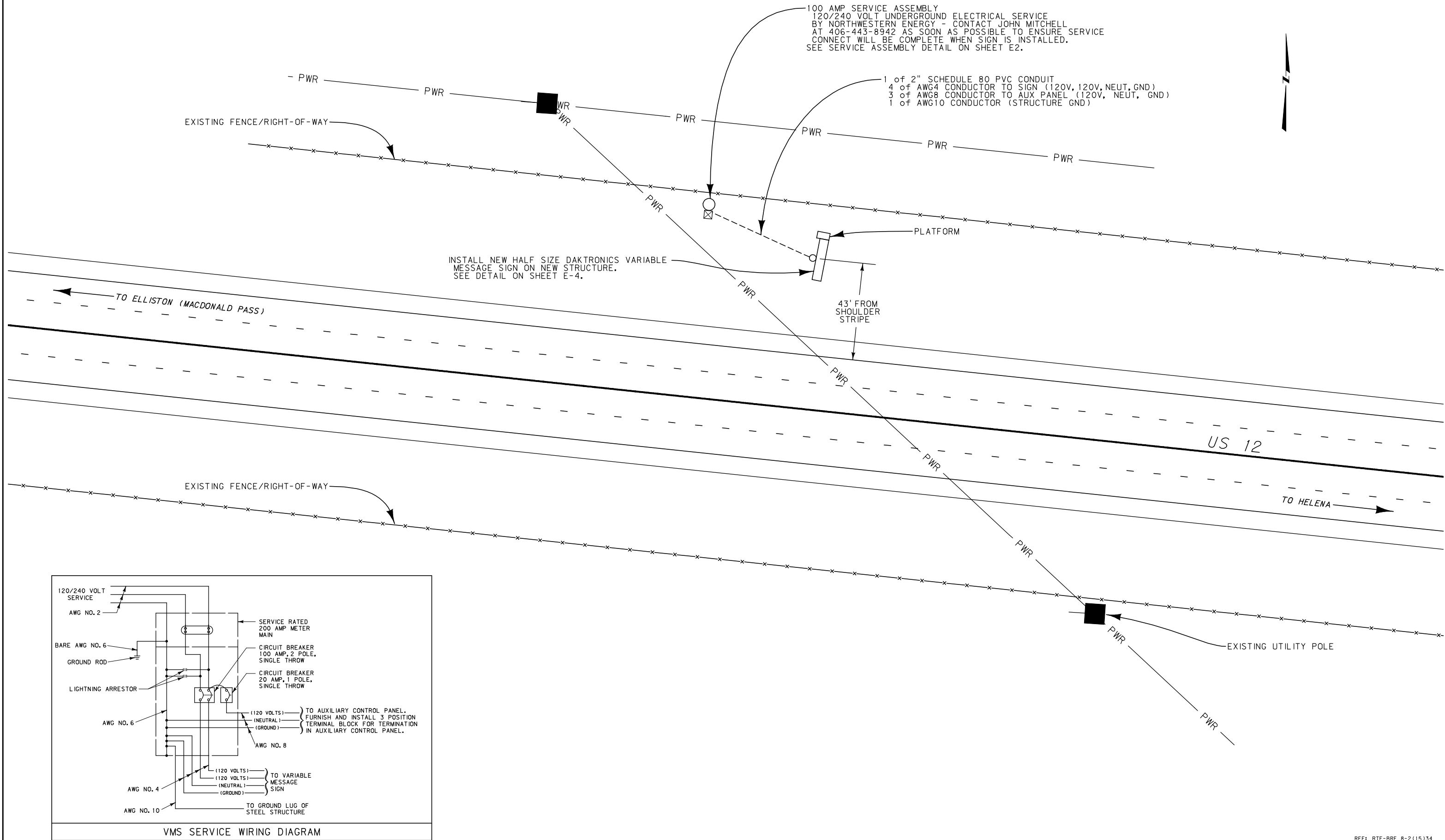
US 12 - REFERENCE POST 23.0



REF: RTF-BRF 8-1(13)11

NO SCALE

3 2	 MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\7037000\ELPLN002.DGN	DESIGNED BY	Dennis E. Schrock	March 2010	POWELL COUNTY	2010 VMS	UPN 7037000	IM-NH-STPP STWD(025)
		8/10/2010	REVIEWED BY						
		7:08:08 AM	CHECKED BY						Sheet E9 of E13

**US 12 – REFERENCE POST 34.67**

REF: RTF-BRF 8-2(15)34

NO SCALE

## 3



2

RAMP A

RAMP B

RAMP D

RAMP C

$$\underline{\underline{R/W = EX. \quad R/W}}$$

IDAHO  
MONTANA

STA. 0+33.36 MONTANA

—REMOVE EXISTING VARIABLE MESSAGE SIGN.  
INSTALL NEW HALF SIZE DAKTRONICS VARIABLE  
MESSAGE SIGN ON EXISTING CANTILEVER  
STRUCTURE.

EXISTING  
56' X 6"  
STEEL CASING

EXISTING —  
PULL BOX

EXISTING \_\_\_\_\_  
UNDERGROUND POWER  
BY AVISTA UTILITIES

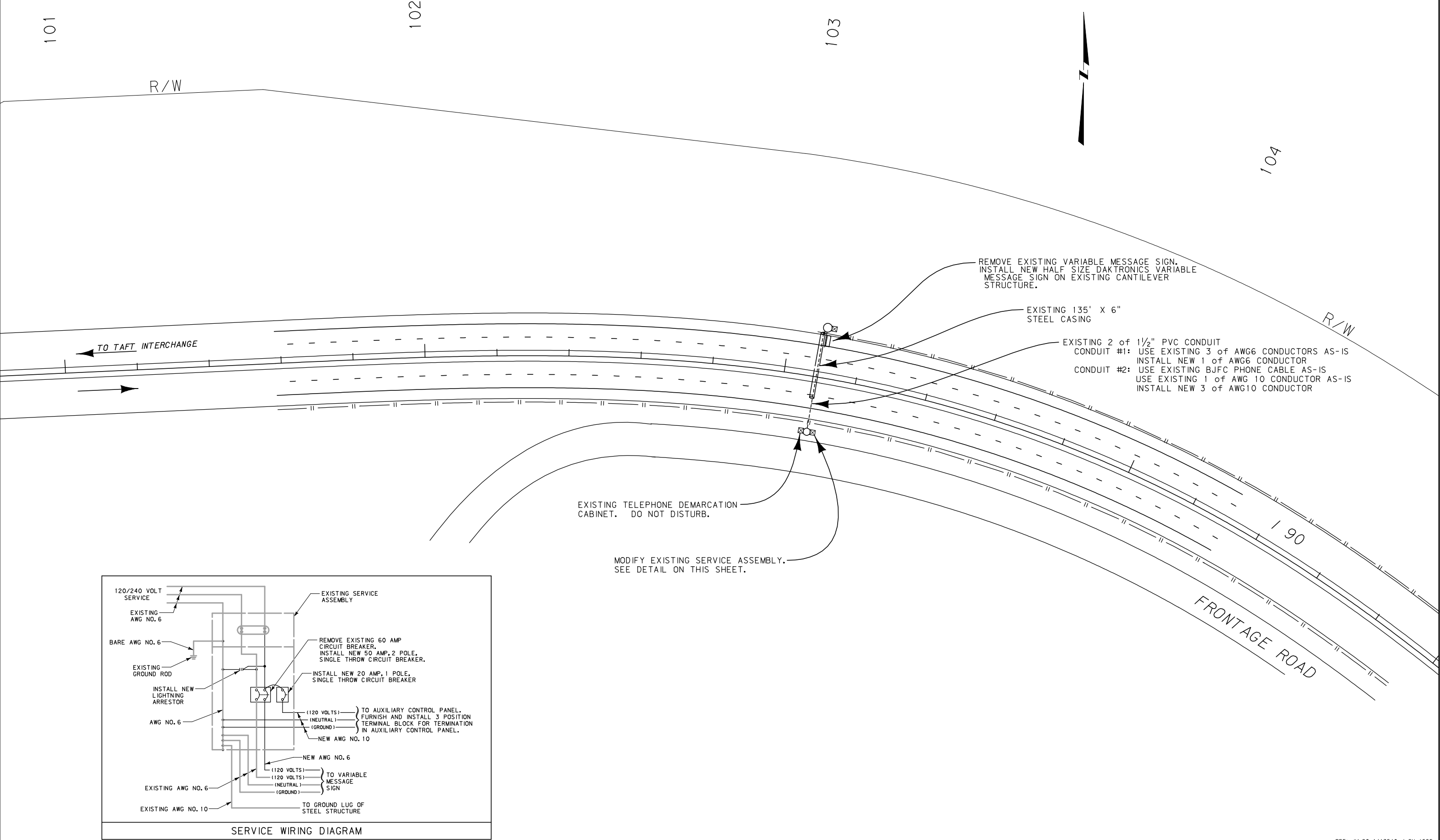
— EXISTING 2 of 1 1/2" PVC CONDUIT  
CONDUIT #1: USE EXISTING 3 of AWG6 CONDUCTORS AS-IS  
INSTALL NEW 1 of AWG6 CONDUCTOR  
CONDUIT #2: USE EXISTING BJFC PHONE CABLE AS-IS  
USE EXISTING 1 of AWG 10 CONDUCTOR AS-IS  
INSTALL NEW 3 of AWG10 CONDUCTOR

— EXISTING 135' X 6"  
STEEL CASING

—MODIFY EXISTING SERVICE ASSEMBLY.  
SEE DETAIL ON THIS SHEET.

EXISTING TELEPHONE DEMARCATION  
CABINET. DO NOT DISTURB.

I 90 - REFERENCE POST 6.3 SITE



REF: IM 90-1(135)0 / CN A585

NO SCALE

3	 MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\7037000\ELPLN003.DGN	DESIGNED BY	Dennis E. Schrock	March 2010	MINERAL COUNTY		2010 VMS		IM-NH-STPP STWD(025)
1		8/10/2010	REVIEWED BY						UPN 7037000	Sheet E12 of E13
		7:09:23 AM	CHECKED BY							
		u7893								

I 90 - REFERENCE POST 16.8 SITE

